

What is claimed is:

1. A support member used to form at least a portion of a catheter shaft, comprising:

an inner member defining an outer surface thereon; and

a first layer disposed over at least a portion of the outer surface of the inner member, the first layer including a selectively curable material, the selectively curable material at least partially cured at desired portions thereof to alter the flexibility of the support member at the desired portions.

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2. The catheter shaft in accordance with claim 1, wherein the first layer comprises epoxy.

3. The catheter shaft in accordance with claim 2, wherein the first layer is ultraviolet-curable.

4. The catheter shaft in accordance with claim 1, further comprising a second layer disposed over at least a portion of the first layer, wherein the second layer includes a first wire ribbon.

5. The catheter shaft in accordance with claim 4, wherein the first wire ribbon is wound in a helical pattern in a first direction.

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A6. The catheter shaft in accordance with claim 4, further comprising a third layer disposed over at least a portion of the second layer, wherein the third layer includes a selectively curable material, the selectively curable material at least partially cured at desired portions thereof to alter the flexibility of the support member at the desired portions.

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A7. The catheter shaft in accordance with claim 6, wherein the third layer is an ultraviolet-curable epoxy.

A8. The catheter shaft in accordance with claim 6, further comprising a fourth layer disposed over at least a portion of the third layer, wherein the fourth layer comprises a second wire ribbon.

A9. The catheter shaft in accordance with claim 8, wherein the second wire ribbon is wound in a helical pattern in a second direction opposite the first direction.

A10. The catheter shaft in accordance with claim 8, further comprising a fifth layer disposed over at least a portion of the fourth layer, wherein the fifth layer comprises a polymer.

11. A support member for use in a catheter shaft, comprising:  
an inner member having an outer surface;

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a first layer comprising ultraviolet-curable epoxy disposed over at least a portion of the outer surface of the inner member, wherein at least a portion of the first layer has been irradiated with ultraviolet light to alter the stiffness of the support member;

a second layer disposed over at least a portion of the first layer;

a third layer comprising ultraviolet-curable epoxy disposed over at least a portion of the second layer, wherein at least a portion of the third layer has been irradiated with ultraviolet light to alter the stiffness of the support member;

a fourth layer disposed over at least a portion of the third layer; and

a fifth layer disposed over at least a portion of the fourth layer.

12. The catheter shaft in accordance with claim 11, wherein the third layer comprises a first wire ribbon.

13. The catheter shaft in accordance with claim 12, wherein the first wire ribbon is wound in a helical pattern in a first direction.

14. The catheter shaft in accordance with claim 13, wherein the fourth layer comprises a second wire ribbon.

15. The catheter shaft in accordance with claim 14, wherein the second wire ribbon is wound in a helical pattern in a second direction opposite the first direction.

16. The catheter shaft in accordance with claim 11, wherein the fifth layer comprises a polymer.

17. A method of altering the stiffness of a catheter shaft, comprising:  
providing a catheter shaft comprising an inner member having an outer surface with a first layer comprising an ultraviolet light curable material disposed over at least a portion of the outer surface of the inner member, the portion having the selectively curable material defining both a region to be cured and at least one flanking region;  
providing an ultraviolet source;  
placing the ultraviolet source adjacent the region to be cured;  
providing at least one ultraviolet shield;  
placing the at least one ultraviolet shield over the at least one flanking region;  
irradiating the region to be cured with ultraviolet light from the ultraviolet source.

18. The method of claim 17, wherein the ultraviolet light curable material is an epoxy.

19. A method of constructing a polymer braid catheter, comprising:  
providing an inner member having an outer surface;  
disposing a first layer over at least a portion of the inner member;  
disposing a second layer over at least a portion of the first layer;  
disposing a third layer over at least a portion of the second layer;  
disposing a fourth layer over at least a portion of the third layer; and

disposing a fifth layer over at least a portion of the fourth layer.

20. The method in accordance with claim 19, wherein the first layer comprises epoxy.

21. The method in accordance with claim 20, wherein the first layer is ultraviolet-curable.

22. The method in accordance with claim 21, wherein curing the first layer alters the stiffness of the catheter shaft.

23. The method in accordance with claim 20, wherein the third layer is epoxy.

24. The method in accordance with claim 23, wherein the third layer is ultraviolet-curable.

25. The method in accordance with claim 24, wherein curing the third layer alters the stiffness of the catheter shaft.

26. The method in accordance with claim 23, wherein the fifth layer comprises a polymer.